In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Withdrawn) A frame assembly for hermetic attachment to one side of a sheet of transparent material having a plurality of window aperture areas defined thereon, each window aperture area being circumscribed by a frame attachment area having a predefined plan, the frame assembly comprising:

a plurality of continuous sidewalls circumscribing a plurality of frame apertures such that some sidewalls are disposed between two adjacent frame apertures, the sidewalls having an upper side plan configured to substantially correspond with the predefined plans of the frame attachment areas of the sheet;

the sidewalls disposed between the adjacent frame apertures including two generally parallel sidewall members having an overall vertical thickness and a first connecting tab extending therebetween; and

wherein the configuration of the sidewalls disposed between adjacent frame apertures, when viewed in cross-section taken perpendicular to the plan view, is characterized by the first connecting tab having a relatively constant vertical thickness that is significantly smaller than the overall vertical thickness of the adjacent sidewall members.

2. (Withdrawn) A frame assembly in accordance with claim 1, wherein the value of the vertical thickness for the first connecting tab is less than 25% of the value of the overall vertical thickness of the sidewall members.

3. (Withdrawn) A frame assembly in accordance with claim 2, wherein the value of the vertical thickness for the first connecting tab is less than 10% of the value of the overall vertical thickness of the sidewall members.

4. (Withdrawn) A frame assembly in accordance with claim 3, wherein the value of the vertical thickness for the first connecting tab is less than 5% of the value of the overall vertical thickness of the sidewall members.

5. (Withdrawn) A frame assembly in accordance with claim 1, further comprising:

one or more additional connecting tabs extending between the sidewall members and being disposed so as to overlap the first connecting tab, when viewed in plan;

wherein each additional connecting tab has a relatively constant vertical thickness; and

wherein the value of the vertical thickness each additional connecting tab is less than 25% of the value of the overall vertical thickness of the sidewall members.

6. (Withdrawn) A frame assembly in accordance with claim 1, wherein the configuration of the sidewalls disposed between adjacent frame apertures, when viewed in cross-section taken perpendicular to the plan view, is further characterized by the sidewall members having a tapered form that is relatively thick in the horizontal direction where vertically adjacent to the connecting tab, and becomes relatively thinner in the horizontal direction as it gets vertically farther from the connecting tab.

7. (Withdrawn) A frame assembly in accordance with claim 1, wherein the connecting tab between two sidewall members runs continuously for the length of the sidewall.

8. (Withdrawn) A frame assembly in accordance with claim 7, wherein the connecting tab is solid.

9. (Withdrawn) A frame assembly in accordance with claim 7, wherein the connecting tab is perforated to facilitate later singulation.

10. (Withdrawn) A frame assembly in accordance with claim 1, wherein the connecting tab between two sidewall members has a length less than that of the entire sidewall.

11. (Withdrawn) A frame assembly in accordance with claim 10, wherein the connecting tab is solid.

12. (Withdrawn) A frame assembly in accordance with claim 10, wherein the connecting tab is perforated to facilitate later singulation.

13. (Withdrawn) A frame assembly for hermetic attachment to one side of a sheet of transparent material having a plurality of window aperture areas defined thereon, each window

aperture area being circumscribed by a frame attachment area having a predefined plan, the frame assembly comprising:

a first layer having a plan including a plurality of continuous sidewalls circumscribing a plurality of frame apertures such that some sidewalls are disposed between two adjacent frame apertures, the sidewalls having an upper side plan configured to substantially correspond with the predefined plans of the frame attachment areas of the sheet;

a second layer having a plan including a plurality of continuous sidewalls, the sidewalls of the second layer having an upper side plan configured to at least partially overlap the plan of the sidewalls of the first layer all the way around each frame aperture;

wherein the first and second layers are joined to one another to create a hermetically gas-tight frame around each frame aperture.

14. (Withdrawn) A frame assembly in accordance with claim 13, further comprising:

the sidewalls disposed between the adjacent frame apertures including two generally parallel sidewall members having an overall vertical thickness and a first connecting tab extending therebetween; and

wherein the configuration of the sidewalls disposed between adjacent frame apertures, when viewed in cross-section taken perpendicular to the plan view, is characterized by the first connecting tab having a relatively constant vertical thickness that is significantly smaller than the overall vertical thickness of the adjacent sidewall members.

15. (Withdrawn) A frame assembly in accordance with claim 14, wherein the value of the vertical thickness for the first connecting tab is not more than 50% of the value of the overall vertical thickness of the sidewall members.

16. (Withdrawn) A frame assembly in accordance with claim 13, wherein the material of the first layer and the material of the second layer are different materials.

17. (Withdrawn) A frame assembly in accordance with claim 16, wherein the value of the coefficient of linear thermal expansion (CTE) of the material of one layer is significantly different from the value of the CTE of the material of the other layer.

18. (Currently amended) A hermetically sealed multi-pane window assembly comprising:

a spacer having a continuous sidewall circumscribing and thereby defining an aperture therethrough, the sidewall having an upper sealing surface and a lower sealing surface;

the upper sealing surface being disposed on the upper side of the sidewall and continuously circumscribing the aperture;

the lower sealing surface being disposed on the lower side of the sidewall and continuously circumscribing the aperture;

a first and a second transparent windowpane sheets, the first sheet being disposed over at least a part of the upper sealing surface continuously around the aperture and the second sheet being disposed over at least a part of the lower sealing surface continuously around the aperture, thereby defining a cavity enclosed by the sidewall and the windowpane sheets; and

the first and second transparent windowpane sheets being each hermetically bonded to the spacer without non-hermetic adhesives to form a continuous hermetic ~~joint~~ bond around the aperture, the hermetic bonds between the first and second transparent windowpane sheets and the spacer each being diffusion bonds of the type obtained by pressing the windowpane sheet against the sealing surface of the spacer to produce an elevated pressure, heating the sealing surface of the spacer and the region of the windowpane sheet near the sealing surface to an elevated temperature, the elevated temperature being below the normal fusing temperatures of both the sheet and the spacer, and maintaining the elevated pressure and the elevated temperature for a period of time such that material from one of the windowpane sheet and the sealing surface of the spacer diffuses into the material of the other of the windowpane sheet and the spacer.

19. (Currently amended) A hermetically sealed multi-pane window assembly in accordance with claim 18, wherein the ~~hermetic bonds between the first and second transparent windowpane sheets are diffusion bonds~~ sealing surfaces of the spacer include a layer of artificially produced oxide overlying any natural oxide film.

20. (Original) A hermetically sealed multi-pane window assembly in accordance with claim 19, further comprising:

an interlayer formed of a material different from the material of the spacer and the material of either windowpane sheet, the interlayer being disposed between the sealing surface of the spacer and at least one of the windowpane sheets prior to diffusion bonding and being incorporated into the hermetic joint after bonding.

21. (Withdrawn) A hermetically sealed multi-pane window assembly in accordance with claim 18, further comprising:

a passage formed through the sidewall of the spacer from the cavity to the exterior; and

a pinch-off tube connected to the exterior of the spacer around the passage;

whereby fluids can be added or withdrawn from the cavity after bonding of the windowpane sheets to the spacer.

22. (Currently amended) A window unit for installation in a building having a rough-in framing structure, the window unit comprising:

a unit frame adapted for installation into ~~the~~ a rough-in framing structure of a building during construction; and

at least one hermetically sealed multi-pane window assembly in accordance with claim 18, the window assembly being mounted into the unit frame.

23. (Original) A window unit for installation in a building in accordance with claim 22, wherein the unit frame is a double-hung window unit including:

an exterior frame/rail assembly; and

two window frames, each frame being independently slidably mounted to the frame/rail assembly and carrying one hermetically sealed multi-pane window assembly therein.

24. (Currently amended) A hermetically sealed multi-pane window assembly comprising:

n spacer(s), where **n** >= 1, each spacer having a continuous sidewall circumscribing and thereby defining an aperture therethrough, having an upper sealing surface and a lower sealing surface;

the upper sealing surface being disposed on the upper side of the sidewall and continuously circumscribing the aperture;

the lower sealing surface being disposed on the lower side of the sidewall and continuously circumscribing the aperture;

(n + 1) transparent windowpane sheets, the sheets being interleaved with the spacers such that one spacer lies between each consecutive sheet, the spacers being disposed to have at least a part of the upper sealing surface overlapping one of the adjacent sheets continuously around the aperture, and at least a part of the lower sealing surface overlapping the other adjacent sheet continuously around the aperture, thereby defining a plurality of cavities enclosed by the sidewalls and the adjacent windowpane sheets; and

all of the transparent windowpane sheets being hermetically bonded to the adjacent spacers without non-hermetic adhesives to form continuous hermetic ~~joints~~ bonds around each aperture, the hermetic bonds between the transparent windowpane sheets and the spacers each being diffusion bonds of the type obtained by pressing the windowpane sheet against the sealing surface of the spacer to produce an elevated pressure, heating the sealing surface of the spacer and the region of the windowpane sheet near the sealing surface to an elevated temperature, the elevated temperature being below the normal fusing temperatures of both the sheet and the spacer, and maintaining the elevated pressure and the elevated temperature for a period of time such that material from one of the windowpane sheet and the sealing surface of the spacer diffuses into the material of the other of the windowpane sheet and the spacer.